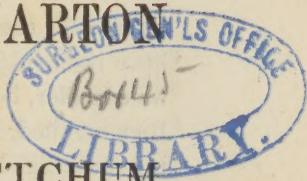


Chew (S. C.)

A MEDICAL SURVEY
OF THE
TRIAL OF MRS. E. G. WHARTON
ON THE CHARGE OF
POISONING GEN. W. S. KETCHUM.



BY S. C. CHEW, M. D.,

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[*From the Richmond and Louisville Med. Journal, July, 1872.*]

The object of the present article is to make a plain statement of those facts connected with the recent trial at Annapolis, which are likely to be of interest to the readers of this Journal.

This is a debt which we feel to be due to them, and which we propose to discharge in consequence of the ample opportunities afforded us for observing every stage of the proceedings.

For certain reasons we had intended postponing our remarks for a later number, but the appearance in the April issue of the "American Journal of the Medical Sciences" of a review of the trial, which tends both by its statements and its omissions to mislead the mind of the Profession, justifies us, we believe, in presenting our view of the case without further delay.

The questions involved in this discussion are of universal professional interest, such as may present themselves in the experience of any medical man; they are questions of diagnosis, of treatment, and, most important of all, of moral duty.

We shall endeavor to discuss them in a spirit free from passion, or from the influence of any personal consideration, but with the desire of vindicating the Profession, of defending opinions naturally and conscientiously formed, and of throwing upon the whole subject the cold, clear light of scientific truth. We seek no personal controversy, nor is it our primary object to uphold the professional reputation of any individuals who have been subjected to misrepresentation and reproach. When we consider, however, that in this trial the Profession itself has been assailed, its capabilities questioned, its methods of reasoning disparaged, and its claims to accuracy derided, then on the ground of simple duty we base the right to defend it, and with it those who were guided in their opinions by its legitimate methods.

Both within the Profession and beyond its borders misapprehensions have arisen, from the supposition that different physicians were led by the same data to opposite conclusions. On this account some of the laity have expressed the belief that medicine is not at unity with itself on most important issues; and certain members of the Profession have too hastily and upon insufficient knowledge charged the physicians most nearly concerned in the case, with giving an incorrect interpretation to facts which they observed.

An analysis of these facts and of the testimony* will show the true explanation of the difference to be this; that opinions on the one side were based upon direct personal observation, while on the other they accorded with a theory which was the offspring of imperfect acquaintance with the case.

In the discussion of this subject our opinions might be elucidated and strengthened by many facts that could be fairly ad-

* Our extracts from the testimony are taken mainly from the Report of the Trial published by the "Baltimore Gazette," and in some instances from the Report of the "Baltimore American."

duced as a part of the history of the case. But we prefer to waive as far as possible all such aid, and to take the same stand upon strictly technical grounds of diagnosis before our readers, that the physicians examined as witnesses were required to assume before the jury. This seems the fairest course, and the one most worthy of the spirit in which all scientific discussions should be conducted. Circumstantial evidence will therefore be adverted to as briefly as possible, nor will reference be made to the train of facts which were alleged to indicate a motive for the commission of the crime.

The question of guilt or innocence is entirely beyond our province, and one more fitted for the "dusky purlieus of the law," than for the *templa serrena* of science.

Investigating the case therefore as a medical problem, we shall confine ourselves to its symptoms taken in connection with such collateral circumstances as must needs be regarded in any question of diagnosis. In professional practice it constantly happens that some facts entirely apart from the phenomena of a case must be taken into account; for they are as legitimate elements in the formation of an opinion as any presented by the physical condition of the patient.

The following is a brief statement of the case which gave rise to the trial:

On the evening of Saturday, June 24, 1871, General W. S. Ketchum came from Washington to Baltimore, and between 8 and 9 o'clock took supper with the family at whose house he was staying, partaking of coffee, bread and butter, cold ham, and raspberries.

About 11 o'clock he retired, and during the night suffered apparently from cholera morbus, which compelled him to leave his room. On the following morning he arose, dressed and went out, but soon returned, complaining of feeling still unwell, and consequently remained in his room until the hour for tea, between 8 and 9 o'clock, when he took a glass of lemonade with brandy in it. During the night symptoms of cholera morbus recurred, causing him to leave his room again. On the next day, Monday, he suffered with nausea, which increased to such

a degree that about 4 P. M., Dr. P. C. Williams was summoned to visit him, and found him much prostrated, with a cool clammy skin, a rapid and feeble pulse, and vomiting repeatedly. He was directed to take two drops of creasote with half an ounce of lime water every two hours, which relieved him.

On Tuesday at 10 A. M. he was again visited by his physician, to whom he stated that he was well enough to return to Washington, and would go that day. He did not go, however, and in the evening was heard to vomit violently, shortly after taking some porter or brown stout.

On Wednesday at 10 A. M. he was found by Dr. Williams in a semi-comatose state, imperfectly conscious, with a clammy skin and a feeble pulse; the face livid, the pupils natural in size but insensitive to light; the muscles of the neck, back and lower extremities were rigid. A slight tremor passed over him when touched. When asked in a loud tone how he felt, he replied, "tolerably," and relapsed into a drowsy state. The urine was tested and found free from albumen.

About 11 A. M. 40 drops of tinct. of gelsemium were administered, which had the effect of diminishing the congestion of the face. At five minutes before 1 o'clock a dose containing two tablepoonsful of liquid was administered, and in fifteen minutes tetanic convulsions ensued; the jaws were firmly clenched, and the surface of the throat and abdomen was abraded with the finger nails. At 2 P. M. a moderate quantity of chloroform was given by inhalation. In answer to a question, as to the seat of pain, addressed to him at this time, he said, "in my stomach." Half an hour later, 30 grains of hydrate of chloral were administered without arresting the convulsions, which increased in violence until his death at 3 o'clock P. M.

On post-mortem examination, patches of redness indicative of irritation were found at various parts of the intestines. The lungs, heart, liver, kidneys, and spleen were healthy; some degree of passive congestion of the pia mater was observed, but no further abnormal appearance, no effusion of lymph or fluid being found in the ventricles or upon the membranes of the

brain. The upper part of the spinal cord was also examined to the extent of two inches, and found free from disease, excepting slight passive congestion.

The single question with which medicine was here concerned, was, whether the diagnostic points of the case were sufficiently clear and well defined to furnish ground for the opinion that death resulted from causes other than natural. It is, of course, freely admitted that to justify this opinion, something more was necessary than the exclusion of all definitely known diseases; otherwise the argument would be based upon the faulty premise that there are no conditions of natural disease except those which have been fully defined and described.

Besides excluding known diseases, it was necessary therefore in maintaining the opinion that death resulted from the presence of poison in the system, to show a resemblance between the symptoms of the case, and those which are known to be produced by poisonous agents. If this could be done, then the combination of negative and positive evidence would warrant the opinion upon strictly medical grounds that death was due to poison.

We do not use the word *opinion* here as synonymous with a definite conclusion; for that, something more was necessary. "Opinion," says Sir Matthew Hale, "is, when the assent of the understanding is so far gained by evidence of probability, that it rather inclines to one persuasion than to another, yet not altogether without a mixture of uncertainty or doubting." But that which, upon medical grounds, was only an opinion—sufficient, albeit, to justify and to demand chemical investigation—would become an assured conviction, if chemistry should establish the presence of a poisonous substance. Assuming the chemical evidence to be correct, a perfect example would be here afforded of the accuracy which medical reasoning can attain unto; an exact science setting upon its opinions the seal of certainty, and proving them incontrovertibly true. The correctness of this chemical evidence will be the subject of inquiry hereafter.

The medical opinion thus formed independently of the chemical evidence was the study of two series of phenomena, the first consisting of the symptoms presented during life; the second, of the post-mortem revelations.

Neither of these series by itself could establish this opinion; but taken in connection with each other, they justified it fully. Some symptoms in the case might have suggested various diseases, which, had they existed, would have left lesions discoverable after death; and, on the other hand, the absence of post-mortem changes is characteristic of some affections, which, however, were excluded, because the symptoms did not correspond with them. This argument, by exclusion, was challenged by the counsel for the defence, and has since been faulted by a medical expert employed by them,* as fallacious and illogical. We maintain that as a reasoning process, it is unassailable, and that to doubt its force indicates either ignorance of the first elements of logic, or a wilful attempt to discredit fair argument. The former alternative none will admit who know the acuteness and ingenuity which were exhibited in the conduct of the defence.

Professor John J. Reese, in his "Review of the Trial," quotes Professors Miles and Chew as testifying that, while they could not ascribe the death to a non-natural cause, either from the symptoms alone, or the post-mortem alone, it was nevertheless their opinion, judging from both combined, "that he did not die from natural causes;" and he asks the question: "Is the above a logical conclusion?" We reply that it is logical to the very strictest requirements of logic, as must be evident to any one desirous of seeing and presenting the truth.

But what must be thought of Professor Reese's handling of Professor Donaldson's testimony upon the same point? This witness had stated that the "*preceding history of the case*, and the absence of the characteristic post-mortem lesions, precludes the idea of cerebro-spinal meningitis;" but Professor Reese

* See Review of the Trial by John J. Reese, M. D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania. Amer. Jour. Med. Sciences, April, 1872, p. 336.

makes the argument appear inconclusive by deliberately omitting the words "the preceding history of the case."

Again, Professor Reese states that Dr. Donaldson in enumerating the symptoms of tartar-emetic poisoning as reported by authors, "makes no mention of the most prominent ones—viz., *vomiting, purging*, extreme relaxation, insensibility of the skin, and increase in the urinary secretion." Turning to the same report of Professor Donaldson's testimony, to which Prof. Reese referred, we find that he used these words, "they speak of *violent vomiting, purging*, and disturbance of the cerebral functions." By what words is such manipulation of testimony to be characterized?

The medical witnesses for the State, in response to a direct question, expressed the opinion that the death resulted from causes other than natural.

This opinion was opposed by experts upon the other side on the ground that it was not supported either by the medical facts or by the chemical analysis.

Two distinct questions are thus presented for consideration, the one medical, the other chemical:

First. Did the symptoms presented during life, taken in connection with the post-mortem revelations, indicate a natural cause of death?

Secondly. If the former question be answered in the negative, was the cause of death poisoning by tartar-emetic?

The discussion of the first question may be kept within narrow limits.

Two of the medical witnesses for the defence expressed a decided belief that the cause of death was cerebro-spinal meningitis.

Professor Edward Warren testifies, "the case of General Ketchum illustrates nothing more nor less than a typical example of that form of cerebro-spinal fever, to which the name fulminant has been so aptly given."

Dr. John R. McClurg testified upon the hypothetical case offered by the defence, "I have no hesitation in saying that death was the result of natural causes; it resembles, undoubt-

edly, cerebro-spinal meningitis more particularly than any other disease." "The symptoms are apparently of the same disease ; all are due to cerebro-spinal meningitis."

The other witnesses for the defence, without committing themselves absolutely to this view of the case, advanced no other opinion. So far as the medical question was concerned, they spoke of cerebro-spinal meningitis as among the possible causes of death.

Professor Reese testified, "I do not wish to be understood as asserting that General Ketchum died of cerebro-spinal meningitis. I think the cause of his death obscure ; but the absence of certain pathological lesions would indicate that he died from that disease."

Dr. John Morris, of Baltimore, testifying to the hypothetical case, said : "I see nothing to exclude the theory of death from a natural cause ; but at the same time, I cannot venture to say what that natural cause was."

Professor Harvey L. Byrd, of the Washington University, Baltimore, testifying also to the same case, said : "In some of its features it resembles the disease known as cerebro-spinal meningitis ; taken as a whole, however, it bears no identity to any disease with which I am acquainted ; the symptoms in the hypothetical statement are not sufficiently connected to enable me to decide that it was a case of cerebro-spinal meningitis."

Others expressed opinions to the same effect, and some dissented from the view that tartar-emetic was the fatal agent, on the ground that the symptoms did not correspond with the effects of that substance.

We shall show that such an assertion must have been due either to want of knowledge of the history of the case, or to imperfect acquaintance with the records of toxicology.

It is not incumbent, therefore, upon those who take the State's view of the case, to disprove the existence of any other disease than cerebro-spinal meningitis ; for none other was affirmed to exist.

Was cerebro-spinal meningitis present ?

In support of this theory several circumstances were appealed

to. The first of these was the alleged existence of an epidemic of the disease in Baltimore. In reference to this it need only be said that the records of the Health Department of the Municipal Government of this city show not one single death from this malady in 1870 or 1871. Now, granting that there may be some inaccuracies in the management of this department, (as doubtless is the case in all other cities), and granting also that some cases of the disease have occurred, it is yet certain that there could have been no such epidemic of cerebro-spinal meningitis as would involve a liability to be attacked by the disease within a few hours of one's arrival in the city. No evidence was offered of any case of the disease having occurred within half a mile of the house in which Gen. Ketchum died; and even had there been an unquestionable epidemic in that section of the city, it is utterly unreasonable to suppose that the disease would have been developed so speedily after entering the infected district. Professor Stillé has shown that troops stationed in a region of country where the malady was prevailing, have entirely escaped its attack.*

We maintain, therefore, that epidemic prevalence of this affection cannot rightfully be adduced as an argument in support of the theory of the defence. Secondly, hyperæsthesia of the skin was dwelt upon, as a symptom of the case indicative of cerebro-spinal meningitis. It is, no doubt, common enough in this disease, but we look in vain for any evidence of it in Gen. K.'s case.

Dr. Williams had stated that on laying his hand upon his patient's shoulder, a slight convulsive tremor passed over the whole body, which, however, did not occur again, even when the General was repeatedly shaken; nor was there afterwards the least sign of exalted sensitiveness when he was moved and his hands were rubbed. Such evidence of agitation is not at all unusual in one who has been suddenly aroused, but is widely different from true hyperæsthesia, showing itself by painful response to every touch. And yet this slight convulsive tremor seems the only reason for the supposition that hyperæsthesia

* Treatise on Cerebro-Spinal Meningitis, p. 96.

existed, and it was regarded as an essential point in the diagnosis. "No fact in this case, said Professor Warren in his testimony, "except that Dr. Williams found that a shiver passed over General Ketchum, when he touched him, brought me to the opinion that he had hyperæsthesia"; "the tremor observed was a sufficient indication to my mind of the presence of hyperæsthesia."

Thirdly. Suppression and retention of urine were referred to as criteria of cerebro-spinal meningitis. The existence of these symptoms seems to be assumed without evidence. Previously to Dr. Williams' second visit on Wednesday some urine had been passed, and sent out of the room.* At the second visit the introduction of a catheter showed the presence of a sufficient amount of healthy urine to make it certain that the kidneys were properly performing their function. The fact that a certain quantity of the secretion had been passed earlier in the day, proves that there was no retention; the fact that a considerable amount was subsequently drawn off by the catheter, proves with equal certainty that there was no suppression. Yet the share which these alleged symptoms bore in the construction of the theory of cerebro-spinal meningitis, is shown by Professor Warren's words, "the fact that there was suppression of the urine furnishes the data for an exact discrimination between the malady of which he actually died and the antimonial poisoning to which it is alleged that he succumbed." Or, as it is reported in the "Baltimore American," "the suppression and retention of urine show that it was cerebro-spinal meningitis; this furnishes me the culminating symptom, and proves cerebro-spinal meningitis." Thus the culminating diagnostic sign is shown to be entirely unsupported by evidence.

It may be well to remark in this connection that albuminuria is an extremely common symptom, and, according to Dr. Radcliffe,† is "perhaps invariably present" in the fulminant form of cerebro-spinal meningitis, of which it was argued that General Ketchum died; and that the examination of the urine showed not the slightest trace of it.

* See Report in the "Baltimore American."

† See Reynolds' System of Medicine, vol. ii., p. 684, edition 1868.

Fourthly. Headache was appealed to as another sign of cerebro spinal meningitis. Let us examine Professor Reese's testimony upon this point, to show how small a foundation the alleged symptom rests upon. Drawing a comparison between General Ketchum's case and one which he had himself attended, and regarded as cerebro-spinal meningitis, this witness stated, "the symptoms were very similar to those of General Ketchum, viz., *violent pain in the head and back,*" etc.

But what reason there was for importing headache into the account of General Ketchum's case, let Professor Reese's own words tell; "*I do not remember that it was here testified that he had a headache*; I got a decided impression that he had a headache from his putting his hands to his head, the throwing back of his head. He might, however, have put his hands to his head because of the pain caused by the ice-bag."

An examination of the record shows no testimony whatever in proof of this symptom, which was simply assumed on utterly insufficient grounds.

But in addition to these positive symptoms, a circumstance of a negative character was also referred to in support of the same theory. It was argued that the absence of pathological changes was another indication of cerebro-spinal meningitis. "In order to complete the picture," said Professor Warren, "and make the description perfect, it is necessary to add that the post-mortem examination gave negative results, or nearly so."* We would merely ask in this connection whether the picture would have been less complete, and the description less perfect, if inflammatory changes in the membranes of the brain and cord had been present instead of absent? The question carries its own answer, and yet absence of inflammatory changes in a tissue is gravely referred to as a crowning proof of the presence of inflammation therein. It is true no doubt that cases of the fulminant form of cerebro-spinal meningitis some times terminate fatally at an early period, before time has elapsed for the occurrence of coarse changes perceptible to the unaided eye. But the irrelevancy of this fact, as applied to the case in ques-

* See report in "Baltimore American."

tion, is seen, when it is stated that the membranes of the brain and upper part of the cord of General Ketchum were subjected to a most careful examination with the microscope, and found to be entirely free from lesion. Professor Miles, an accomplished microscopist, whose preparations of these tissues were examined by Dr. Williams, and the present writer also, could find in them not the least evidence of incipient inflammatory changes.

Several authorities speak of the occasional absence of lymph and pus after death from cerebro-spinal meningitis; but we have yet to find one who states as the result of microscopic investigation that the membranes of the brain and cord were free from all traces of disease.

Dr. Radcliffe, in his article upon the subject in "Reynolds' System of Medicine," mentions as the "*essential anatomical characteristics* of the disease, hyperæsmia of the pia mater of the brain and spinal cord, with more or less copious subarachnoid and interstitial effusion into the meshes of the congested pia mater. . . . In fatal cases of the simple and purpuric forms, the *characteristic anatomical lesions* are almost invariably found. In the fulminant form of the disease they are often absent." *They*, that is, the characteristic lesions above enumerated, are often absent; but it is nowhere stated that there is an absence of such changes as the microscope can show.

Referring to the observations of Dr. Woodward upon the pathology of cerebro-spinal meningitis, quoted in "Aitken's Science and Practice of Medicine," Professor Warren remarked, that "Dr. Woodward is the best microscopist in the world, and has made more discoveries with the microscope than any other person." We admit Dr. Woodward's proficiency as a microscopist, but inasmuch as in the passage referred to, he gives merely the recorded observations of others, without reference to the microscope, we do not see that his microscopical knowledge has any bearing upon the case in question. If cerebro-spinal meningitis have really existed, then, although death may have occurred too speedily for the formation of coarse structural lesions, yet we believe the microscope would surely bring to light the incipient traces of such lesions.

In support of this opinion, we refer to the Treatise of Dr. Rosenthal, of Vienna, upon "Diseases of the Nervous System," one of the ablest and most recent works upon the subject, which, however, has not yet been translated into English. In the section devoted to cerebro-spinal meningitis, after mentioning the various epidemics of the disease that have prevailed in Europe and the United States, he thus speaks of its pathology: "The true seat of purulent meningitis is the pia mater; in quite recent cases this appears *merely injected*; at later periods, on the other hand, it is dim, lustreless, and covered with a gelatinous, transparent exudation."

Perceptible active congestion is thus regarded as a constant result, which may, or may not, according to the duration of the case, be followed by the products of inflammation.

We have now seen that the prominent symptoms appealed to as indicating cerebro-spinal meningitis had absolutely no existence at all; what becomes then of the opinions founded upon their alleged presence?

The story is told of Cuivier, we believe, that when the crab was spoken of as a red fish that walks backwards, he replied, "the description is admirably correct, with the slight defects, however, that the crab is not red, it is not a fish, and it does not walk backwards." So it must be remarked that the resemblance to cerebro-spinal meningitis as shown in the case under discussion by cutaneous hyperæsthesia, suppression and retention of urine, and headache, is somewhat marred by the facts that there was no hyperæsthesia, there was no suppression or retention of urine, and there was no headache.

Its supports thus demolished, the whole structure wrought with such elaborate detail, proves to be "the baseless fabric of a vision."

Certain other clinical phenomena, referable to the nervous system, were mentioned in illustration of the theory of the defence, such as rigidity of the muscles of the neck and convulsive movements of a tetanic character. Depending upon disturbed innervation, they are met with in cerebro-spinal meningitis, but are by no means characteristic of that disease. That

they occasionally occur in the clinical history of tartar-emetic poisoning is abundantly evident; and that the possibility of a superficial examiner mistaking them for signs of idiopathic cerebro-spinal disease is shown by an interesting passage in "Virchow's Pathology and Therapeutics," edition of 1855, in which he speaks of cerebro-spinal affections resulting from the use of tartarized antimony, and even terms the condition *cerebro-spinal stibism*; the word being derived from *stibium*, antimony.

But again, the State's view of the case was objected to by certain of the medical experts for the defence, on the ground that neither the symptoms nor the post-mortem appearances corresponded with those of poisoning.

Professor Warren testified, "the action of tartar-emetic can not account for the phenomena observed in this case, either for the symptoms or the pathological revelations."

In the testimony of Professor Reese, we find the following statement: "Neither the symptoms nor post-mortem revelations present to my mind an indication of tartar-emetic poisoning; the post-mortem signs are not such as I should expect to find in a case of tartar-emetic poisoning, chiefly for the absence of signs of decided inflammation in the stomach and the alimentary canal."

But when cross-examined, the same witness admits that "in cases of tartar-emetic poisoning, there may be no signs of irritation in the intestines and alimentary canal." Now, if this latter assertion be true, as it undoubtedly is, how can the absence of these signs be regarded as in any degree excluding tartar-emetic as the cause of death? In fact, the objection, whatever it be worth, is fully answered by this very admission.

While it is true that tartar-emetic in poisonous quantities generally causes muscular relaxation, it is yet equally certain that through an influence on the nervous centres it sometimes occasions rigidity and convulsions.

Taylor refers in his work on Poisons to a case in which four grains of tartar-emetic were followed by strong convulsions, lasting for half an hour. In another case, reported by the

same author, a man twenty-eight years of age took, by accident, two grains of tartar-emetic, and suffered with a constant spasmodic contraction of all the muscles, especially of the abdomen and upper extremities.

"Among the phenomena of poisoning by tartar-emetic," says Professor Stillé, in his work on *Materia Medica*,* "is rigidity of the muscles of the neck, jaws, abdomen, and extremities." And Professor Wood, in his *Therapeutics*,† states that under the influence of the same drug "convulsive movements are sometimes induced." Therefore the absence of muscular relaxation cannot be urged in disproof of the action of tartar-emetic.

On the other hand, while it is true that an agent possessing the irritant properties of tartar-emetic will often leave signs of its local action, yet exceptions‡ to this are by no means rare. The experiments of Rayer, says Christison,‡ "show that death may occur from tartar-emetic without inflammation being excited anywhere. Professor Stillé refers to a case in which two grains given to an adult proved fatal after producing violent symptoms; no lesion of the stomach was found after death." Professor Wormley mentions a case in which death was caused by vomiting and purging occasioned by an unknown quantity of antimony; "thirty-nine hours after death there were no well-marked morbid appearances in any of the abdominal organs." Therefore the absence of conspicuous post-mortem traces cannot be regarded as excluding tartar-emetic.

So far we have been discussing the medical aspect of the case. In concluding this portion of the subject, we contend that the characteristic symptoms of cerebro-spinal meningitis were not present; and that such prominent points in the history of the case as vomiting and purging present at one time and subsequently absent; pain in the stomach, rigidity of the muscles, convulsions, and ultimately post-mortem results nearly negative in character, are compatible with and are best explained by the presence and action of a poisonous substance.

What was that substance? Medical investigation alone could

* Vol ii., p. 372.

† Vol ii., p. 62.

‡ *Work on Poisons*, vol. i., 371.

not determine this; and we have therefore to examine next the chemical question involved. We shall do so briefly, because the fallacy of the position taken by the defence is readily exposed.

Avoiding as far as possible all minute details, the chemical facts of the case are these. Professor Aikin, to whom the analysis of the contents of General Ketchum's stomach was committed, had by the application of certain tests detected, as he testified, the presence of antimony. In the endeavor to throw doubt upon the results of his examination, the chemical experts for the defence showed certain reactions obtained from a combination of substances alleged to represent the contents of the stomach. They argued that inasmuch as results similar to Professor Aikin's had been gotten by tests like his from matter containing no antimony, therefore his own conclusions as to the presence of antimony were vitiated. A perfectly just argument, had the premises been true; we shall show that they were false.

Professor R. S. McCulloch, of the Washington-Lee University, produced in court a bottle containing a mixture of chloral and tincture of yellow jasmine, medicines, it will be remembered, which had been administered to General Ketchum. To this he added what, according to his statement, Professor Aikin had added to the contents of the stomach—viz., tartaric acid neutralized by bi-carbonate of soda. Putting a part of this fluid in a test-tube, he poured upon it a few drops of hydrosulphate of ammonia. A color reaction took place, which was represented as similar to what Professor Aikin had attributed to the formation of sulphide of antimony. On inspection, however, it was evident that in Professor McCulloch's experiment the change in color really took place in the supernatant liquid, and not in the precipitate, and that this bore no resemblance to the antimonial precipitate. This was much more apparent on the following day, when Professor McCulloch's tube being brought into court, and placed beside one containing a true antimonial precipitate, the appearance of the two was striking, not from their resemblance, but from their violent contrast. The precipitate obtained by Professor McCulloch was on this

day shown to Dr. Genth, a chemist summoned by the defence, who stated that "it did not, so far as he knew, resemble that from tartar-emetic." And two days later, when a phial containing Professor McCulloch's precipitate, and one containing an antimonial precipitate were held up in court, Professor Reese stated that "they were not now identical in color."

The whole exhibition was indeed more suggestive of legerdemain than a scientific procedure. In feats of slight-of-hand advantage is taken of distance from the eye, whereas in this piece of forensic jugglery the element of time was counted upon, the "jest's prosperity" depending upon the chance that the glass might not be kept.

But a still graver charge must be brought against the chemical experts for the defence. It was of course essential to the fairness of any comparative experiments, that in both cases the same reagents should be used, and the same conditions complied with in all respects.

To show the presence of antimony in a solution containing it, sulphuretted hydrogen is first added, which produces an orange-red sulphide of antimony; the precipitate thus formed is dissolved in boiling hydrochloric acid; this solution dropped into water gives a white precipitate, and if this white precipitate be tested with sulphide of ammonium, the orange-red color will reappear. Professor McCulloch affirmed that he had applied these reagents (using, however, cold instead of boiling hydrochloric acid) to his chloral and jasmine solution, and had gotten results similar to those obtained by Professor Aikin. What his notion of resemblance in color reaction was, we have already seen. But at this point he stopped short, and deliberately omitted to apply a further test which was used by Professor Aikin, and regarded by him as furnishing additional proof of the presence of antimony. The white precipitate obtained by dropping the hydrochloric acid solution into water, if antimonial, is soluble in *tartaric acid*. Professor Aikin testified that he had added tartaric acid, and found the precipitate soluble therein; "that completed all that was needed to satisfy me that I had been dealing with a preparation of antimony."

But Professor McCulloch, when subjected to a cross-examination, made this admission: "I did not undertake to dissolve that white cloud with tartaric acid; in one of Dr. Aikin's experiments he dissolved the white cloud with tartaric acid; *the white cloud thrown down by antimony dissolves in tartaric acid*"; and again "it is a characteristic test to dissolve an antimonial in tartaric acid."*

Professor Reese, when examined in reference to the same omission, testified:† "I did not dissolve the white cloud from gelseminum in tartaric acid; *that is one of the tests for antimony*. I do not know why it was not done." I saw these experiments proceed up to the white cloud."

The Attorney-General here asked, "Why did you stop there?" to which the witness replied, "I do not know; you will have to put Professor McCulloch on the stand in regard to that." But this was hardly necessary; for it is difficult to conceive a more complete abandonment of a position than is shown by Professor McCulloch's testimony upon this point. After starting out with the bold assertion that the tests used by Professor Aikin were not sufficient to establish the presence of antimony, he was obliged, under a stringent cross-examination, to acknowledge that Professor Aikin had applied the proper test, and had gotten a result characteristic of that metal. In other words, his testimony on this point confirmed the State's position.

The question left by Professors McCulloch and Reese at a critical moment in an interesting state of uncertainty, was subsequently settled by Professor Aikin, who, when called as a rebutting witness, testified, "that the white cloud when it was obtained from the contents of the stomach, and treated with tartaric acid, totally dissolved; the white cloud from chloral and gelseminum would not dissolve at all when treated with tartaric acid."

The conclusion reached by Professor Aikin was corroborated by Dr. Craig, the chemist in charge of the laboratory of the Surgeon-General's office in Washington, who testified in regard

* See Report in "Baltimore American."

† Report in "Baltimore American."

to Professor Aikin's written report, "no other substance known to science except antimony would, under the tests here described, have given the result."

At the second exhumation of the body, undertaken by direction of the law-officers of the State, the liver was obtained for the purpose of ascertaining whether the antimony had been absorbed. It was examined by Professor Tonry, who applied Marsh's test in the earlier part of his analysis, and obtained spots indicative of either antimony or arsenic. Further analysis proved them to be antimony. The amount was small, for in consequence of the ready solubility of antimony its elimination from the system is rapid, as shown by Orfila and other chemists. For this reason, authorities who urge the importance of producing arsenic in the metallic form, do not make the same requirement in regard to antimony. The spots, however, were produced, and it was necessary to explain their production.

A certain Dr. Caius once asked the natural question: "What shall the honest man do in my closet?" With similar pertinency the question might be put, How did these spots happen to be formed?

The chemists for the defence found a happy solution of the difficulty by referring them to impurities in the materials employed in the analysis; and thus tried to vindicate their honest presence. To our apprehension, their correspondence with previous chemical results obtained by the use of other materials, is far too striking to admit of any such explanation.

The final stage of Professor Tonry's analysis, which resulted in the reduction of metallic antimony, was not completed in time to be allowed as evidence. Inasmuch, however, as it was openly announced, though in the absence of the jury, and thus became a part of the scientific record of the case, we have no hesitation in stating that *the metal was brought into court*, and held ready for exhibition to the jury and to the experts for the defence. We mention this fact for whatever additional weight it may give to chemical results already conclusive.

In the former part of this article the opinion ascribing the

death to poison was stated to have been founded on medical reasoning. This opinion was confirmed by the results of chemical investigation, which, as has been seen, showed unmistakably the presence of antimony in the stomach and liver of the deceased.

Professor Reese, in his comment upon the trial, remarks: * "All we desire to insist upon here is the very strong presumption that the medical testimony of the State was materially influenced by the *assumption* of the actual discovery of tartar-emetic in the body of Gen. Ketchum by the chemical analysis."

Now, it is clear from the evidence that this presumption is unfounded, because the medical opinion formed, as already stated, suggested in the first instance the necessity for a chemical examination. Professor Reese is in error, both logically and chronologically—logically, in confounding a cause with an effect; and chronologically, in not remembering that the expression of the medical opinion antedates the chemical analysis.

An examination of the testimony would have prevented him from falling into this latter error, and from intimating that the idea of poison "entered the mind of Dr. Williams in consequence of his being shown a tumbler containing a suspicious looking sediment."

We would remark here that there was nothing very suspicious in the *look*, but something exceedingly suspicious in the acrid *taste* of that sediment. Whether or not this gave just cause for suspicion, it is certain from the evidence that Dr. Williams, before hearing of the tumbler, and solely from observation of the symptoms, had remarked to a bystander, "I fear the General has been poisoned." And accordingly, he testified that, after tasting the contents of the tumbler, he returned to the room with his doubts changed into a conviction that his patient had been poisoned.

Yet, in the face of this testimony, Prof. Reese, endeavors to make it appear that the tumbler first prompted the thought of poison.

* Amer. Jour. Med. Science, April, 1872, p. 352.

Professor Reese alleges that Drs. Williams, Miles, and Chew, who made the post-mortem examination, were influenced by the strong suspicion of poison. To this, we reply, that it is undoubtedly true. Examinations of this kind are not usually made, we believe, except upon suspicion. Had they not suspected poison, they would not have deemed it necessary to make the examination; and it was in order to ascertain whether the opinion already formed, would be substantiated by pathology and chemistry, that their task was undertaken.

Professor Reese censures these witnesses for "impropriety in conducting a post-mortem examination where there is suspicion of death by poison . . . without the presence and oversight of the legally constituted authority—the coroner."

We cannot see what possible effect the presence of the coroner could have had, except to give publicity to the affair, when, in view of the possibility of negative results, a proper regard for all concerned prompted concealment. Had the course Prof. Reese deems proper been followed, it would surely have been censured by some as hasty and inconsiderate. The coroner, had he been summoned, would have been obliged to seek just such professional knowledge as was applied to the case without his offices.

The second exhumation which occurred during the course of the trial, and which Professor Reese characterizes as "a still more glaring departure from propriety," was effected by the law officers of the State, with the understanding that whatever its results, they should be made known. It is perfectly obvious that these authorities were under no obligation to invite the defence to take part in a procedure which at any time could have been resorted to independently by the defence itself.

When Professor Reese asserts that the examination "was in the hands of those who were not entirely devoid of prejudice," meaning thereby, if words mean anything, that their preconceptions would prevent correct observation, we meet the aspersions with a denial of its truth. Such a charge would be unworthy of notice, if suggested by an advocate in the heat of an argument before a jury; but when deliberately propounded

by a medical man against fellow-members of the Profession, it is so utterly unwarrantable as to cause not only surprise, but well-founded indignation.

A strange inconsistency is betrayed by Professor Reese in charging the medical witnesses of the State with being under the influence of prejudice, while at the same time he asserts that none of them testified that tartar-emetic was the cause of death. How is it possible to reconcile these two statements with each other? Does Professor Reese doubt that these witnesses believed tartar-emetic to be the cause of death? If, then, they are under the influence of prejudice, what better way of manifesting their prejudice than by expressing their belief? If, on the other hand, believing as they assuredly did, they were yet reticent as to their belief and reluctant to express it, then how can he allege that they were acting under the influence of prejudice? His positions are mutually destructive of each other. But if he desires to know why reference was not made by the State's witnesses to tartar-emetic as the fatal agent, the reason is easily given, and it is one which, in the judgment of all fair-minded persons, should absolutely acquit them of the charge of partisanship or prejudice. At no time were they questioned by the counsel for the State as to whether they believed the death to have been caused by tartar-emetic; and they held it to be no part of their duty to advance opinions which might injuriously affect the accused.

We regret being compelled to allude to matters of a personal nature, which, as far as possible, we had determined to avoid; but a word more must be said.

An intimation lurks in the pages of Professor Reese's review that certain members of the Faculty of the University of Maryland were influenced in giving their medical testimony by the fact that Professor Aitken was their colleague. This is nowhere openly stated, but it is clearly intimated. A charge of such a nature, however faintly suggested, however salved over by allusions to "high character and standing in the Profession," demands notice, that it may be repelled. Were it made openly, though not less injurious, it would have been more manly; but

being implied and not expressed, we can but regard it as an indication of the spirit which is "willing to wound and yet afraid to strike.

It was stated at the beginning of this paper, that besides the questions of diagnosis suggested by the case, considerations of a moral nature were also involved in it. Physicians are ordinarily occupied with tasks, the accomplishment of which carries with it a large measure of reward. But in circumstances like these, the application of professional knowledge which they are required by duty, as well as compelled by law to make, engages them apparently in strife, and may subject them with unmistakable reality to obloquy and reproach.

Against such reflections, however, the proper and the only antidote is this: that in whatever sphere medical knowledge may be required, there it is our duty honestly and patiently to work.

The medical and chemical facts of this case, and the opinions founded thereon, we submit to the judgment of the Profession.

